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by
Bruce P. Van Haveren and Larry E. Hamilton

Paper presented at 4th North American Conference on Society and Natural Resources, May 17-20, 1992, Madison, Wisconsin.

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STRATEGIC PLANNING FOR NATURAL RESOURCES RESEARCH[1]

by

Bruce P. Van Haveren and Larry E. Hamilton[2]

Abstract

This paper describes a strategic plan for incorporating science and research in the Bureau of Land Management (BLM), a resource management agency within the U.S. Department of the Interior. The results of the strategic planning effort are used in constructing an organizational framework for research. The framework has dimensions defined by the mission and culture of the parent organization; the need for high-quality, credible science; and the imperative that both research needs and research results be closely linked to the agency's field operations.

The Bureau of Land Management (BLM) is responsible for managing over 270 million acres of public land and associated natural resources. Most of the lands are in Alaska, Arizona, California, Colorado, Idaho, Montana, New Mexico, Nevada, Oregon, Utah, Washington, and Wyoming. An Eastern States Office in Alexandria, Virginia is responsible for the agency's mission east of the Mississippi River. In addition, BLM manages the mineral estate under 300 million acres of other Federally-administered, State-owned, or private lands. Thus, BLM has the largest natural resource base under Federal management in the United States.

BLM is committed to manage, protect, and improve the public lands in a manner to serve the needs of the Nation for all times. Management of lands and resources is based on the principles of multiple use and sustained yield within a framework of environmental responsibility and scientific accountability. These resources include recreation, rangeland, timber and other forest resources, minerals, soil and watershed, fish and wildlife habitat, wilderness, and scenic, scientific, and cultural values.

Since passage of the Federal Land Policy and Management Act (FLPMA) in 1976, BLM has successfully shifted to a multiple-use land management philosophy and substantially increased its scope of resource management activities (Clarke and McCool, 1985). The agency has also broadened its mission and attracted a more diversified constituency (Bradley and Ingram, 1986). The public lands are increasingly being scrutinized by a broadening array of interest groups. Many of the land and resource management issues that

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the public views as important have developed out of the increasing concern for improved stewardship of our nation's natural resources. More than ever before, BLM is being asked to provide a scientific basis for resolving complex and critical resource management issues.

The BLM Director has made the decision to proceed with new organizational initiatives in order to prepare the agency for the 21st century. A research function effectively linked to the policy development and operational activities of the parent organization can provide a forward-looking, long-term perspective of public lands management.

THE ROLE OF RESEARCH IN NATURAL RESOURCES MANAGEMENT

Natural resources research has been defined as research activities that contribute to the management, conservation, and development of natural resources and that encourage understanding of the natural environment. While natural resources research funding has declined in terms of real dollars since 1980, the demand for research results continually increases. This deficit has resulted in inadequate knowledge on which to base resource policy (Day and Ruttan, 1991).

Trends in natural resources management include a greater complexity of land management issues resulting from increasingly controversial, politicized, and confusing policy arenas (Dana and Fairfax, 1980); greater experimentation with alternative futures and recognition of global linkages with regional activities (Riebsame, 1990); and increasing scientific uncertainty surrounding environmental issues (Funtowicz and Ravetz, 1990). These are the challenges facing natural resource management agencies as we approach the 21st century. Although research is not the panacea for meeting these challenges, an effective research function can increase an organization's capability to deal with increasing complexity and uncertainty.

STRATEGIC PLANNING FOR RESEARCH

Successful organizations are guided by clear missions and by strategic thought and action (Bengston, 1990). They develop strategies to identify, manage, and resolve issues crucial to the well-being of the organization. A research organization needs to have a clearly defined sense of direction and a focused agenda (Sesco and Bey, 1991). This is particularly true in the case of BLM, which does not receive line-item funding for research and must "invest" in research using funding from operational programs. BLM's overriding goal in the strategic planning process was to design an efficient and effective research function that would result in better integration of science into the agency's day-to-day operations and an improved capability to deal with emerging natural resource issues.

Bengston (1990) recommends the following strategic planning steps for public research organizations:

1. Initiating and agreeing on a strategic planning process
2. Identifying and clarifying organizational mandates
3. Conducting a stakeholder analysis
4. Developing a mission statement

5. Assessing the external and internal organizational environments

6. Identifying strategic issues

7. Formulating strategies to manage strategic issues

8. Implementing and monitoring the strategic plan

To initiate the strategic planning process, the BLM Director requested that the National Public Lands Advisory Council study the current status of BLM research and recommend a future direction. Planning steps 2, 3, 5, and 6 were effectively addressed by the Council in its final report to the Director. A task group of senior BLM managers then completed a mission statement and functional analysis, developed an organizational framework, and formulated strategies to deal with strategic and administrative issues. The strategic plan is now in the process of being implemented.

A UNIQUE NICHE IN NATURAL RESOURCES RESEARCH

BLM manages a vast mosaic of public lands. Its strength as an agency derives from its responsibility for managing resource diversity and land-use complexity. In addition, BLM's workforce is highly competent, diverse, and motivated. Another of the agency's strengths is its ability to use interdisciplinary approaches and teamwork to solve problems. BLM is a relatively small agency and can still operate like a close-knit family. An organization that successfully uses teams and task forces is in a good position to deal effectively with a complex and changing external environment.

A research function in BLM must both support the mission and fit the culture of the agency. BLM's culture includes decentralized decisionmaking, which focuses agency activities close to the ground. Policymaking is increasingly decentralized and *ad hoc*. The agency's credibility with the scientific community will be enhanced if high-quality science is integrated into policies and decisions.

There are five major contributions that research will make to BLM's basic mission. These are also viewed as strategic opportunities for the agency.

1. Increased knowledge of natural resources and natural systems on the public lands

   This includes a greater understanding of natural processes and management implications in arid, semiarid, arctic, and subarctic ecosystems.

2. Forward-looking issue identification and analysis

   The emerging issues role of BLM research should be to assist senior management in issue scanning, identifying both threats and opportunities to the agency. According to Murphy (1989), issue scanning is a type of boundary spanning that includes both internal analysis (identifying strengths and weaknesses of the organization) and external analysis (looking beyond the agency's boundaries for emerging issues).

Land and resource management policy questions must be the basis for research needs. BLM will seek to identify national and international natural resources management trends and emerging issues. This knowledge will be integrated with field-generated research needs in order to develop future research agendas for BLM.

3. Support of policy formulation, decisionmaking, and problem-solving

Knowledge produced by research must be embodied in the agency's decisionmaking processes in order to improve land management decisions and agency policies. Research should have an incremental and subtle influence on decisions and policymaking. Research results may be considered as one of many information tributaries contributing to a stream of decisions and policy changes (Bengston, 1989).

According to Dana and Fairfax (1980), one of the factors influencing forest and range policy is negotiated settlements resulting from interactions among competing interest groups. Research results can be used to inform these competing interest groups. The major effect of research on policymaking may be the gradual distillation of insights, theories, concepts, and ways of looking at issues. This is the enlightenment model of research (Weiss, 1977).

The prevailing concept of policy-related research is that specific research results are applied to specific decisional choices. It is more likely that policymakers and decisionmakers use research results to help them think about issues, define the problems, and gain new ideas and perspectives (Weiss, 1977).

The problem-solving model of research suggests that research is helpful in identifying problems as a step toward putting issues on the agenda. Research may also lead to a new understanding of problems or new approaches to dealing with a problem. More importantly, research can assist the policymaker in deciding what the problems are.

4. Resolution of partisan arguments

According to Clark and Majone (1985), one of the most important functions performed by scientific inquiry in policy contexts is the provision of procedures for resolution of partisan arguments. Research results can be used to establish and clarify the facts of an issue.

5. Management of uncertainty

Uncertainty stems from the increasing diversification of the variables that must be weighed in land management decisions. Increasingly controversial, politicized, and confusing policy arenas lead to increasing complexity of issues. Consensus on

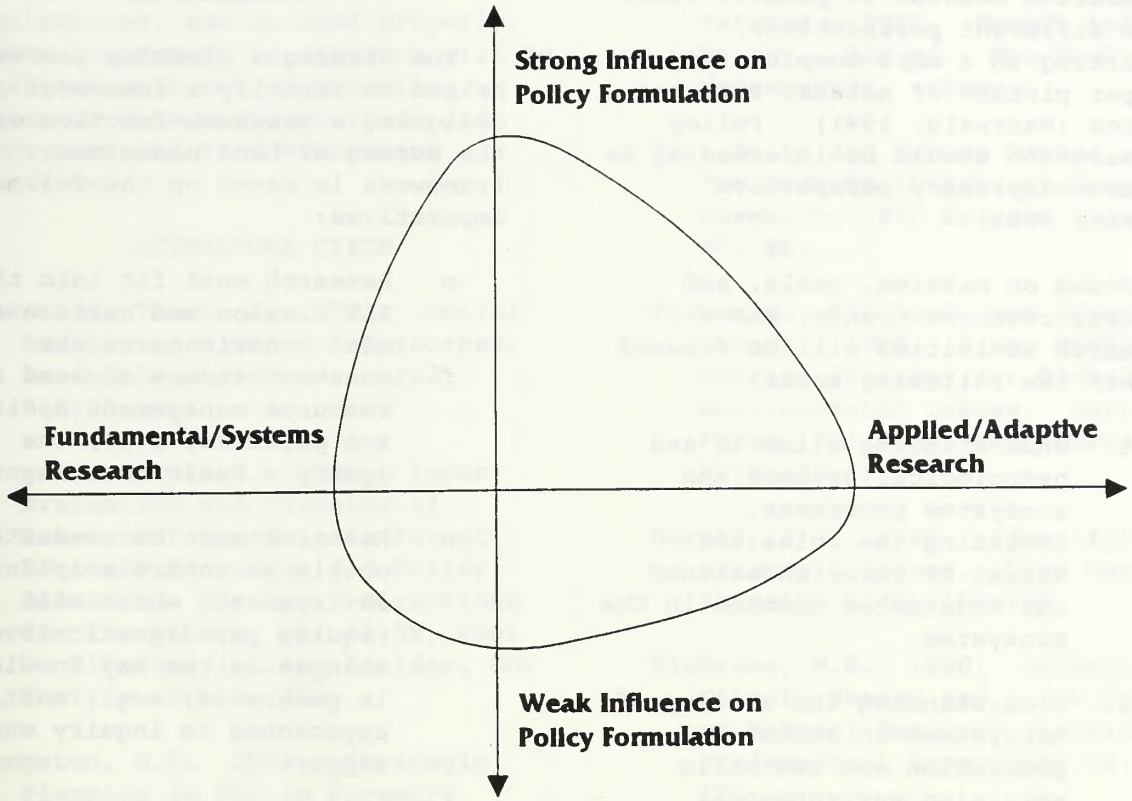

Figure 1. The majority of research conducted by the Bureau of Land Management is applied research integrated into the policy formulation and land management activities of the agency.

goals and priorities in wildlands management has broken down. Assumptions are being broadly questioned from a number of diverse perspectives (Dana and Fairfax, 1980). Under uncertainty, active response strategies that keep all options open must be developed. This is the uncertainty management role of research. In addition, decision-making time can be bought by research (Wiman, 1991).

The BLM's unique niche in the conduct of natural resources research is ***integrative, strategic research performed by interdisciplinary teams to support the Bureau's mission of sustained-yield, multiple-use resource management.*** As portrayed in Figure 1, BLM will support research that is primarily applied and policy-related.

Strategic research is defined as the development of fundamental knowledge from which critical and emerging natural resource management issues can be effectively and expediently addressed. Research is integrative when research products are supportive of, and integrated into, the policy formulation activities of the agency. Interdisciplinary research, which is research conducted by teams that bridge the physical, biological, and social sciences, has the potential to greatly increase knowledge

production because it permits views from different perspectives, resulting in a more complete and deeper picture of natural resource issues (Baerwald, 1991). Policy formulation should be informed by an interdisciplinary perspective (Wiman, 1991).

Based on mission, goals, and natural resource trends, BLM's research activities will be focused within the following areas:

1. Understanding climatic and hydrological systems and ecosystem processes, including the roles and values of rare, threatened and endangered species in the ecosystem.

2. Understanding the ability of ecosystems to sustain production and use while retaining environmental health, species diversity, and genetic variability.

3. Understanding geologic processes, minerals occurrence, extraction/ development procedures, and techniques for conservation of mineral resource commodities.

4. Development of technologies for improved management or rehabilitation of land and resources.

5. Understanding social, economic, and institutional relationships and their influences on land and natural resource management.

6. Understanding cultural and historical uses of the public lands and their implications for modern management.

CONCLUSIONS

The strategic planning process helped to identify a framework for designing a research function within the Bureau of Land Management. This framework is based on the following imperatives:

- Research must fit into the BLM mission and culture and must contribute to the constant stream of land and resource management decisions and policies; i.e., the agency's basic business.

- Research must be conducted within an interdisciplinary environment, which will require paradigmatic-level changes in the way knowledge is generated; e.g., multiple approaches to inquiry must be supported.

- Research must be visible within and outside the agency, credibility within the scientific community must be earned, and research results must be generated without bias and without political influence.

- Organizational design, managerial style, research personnel recruitment, and incentives/rewards systems must logically follow the strategic plan.

Implementation of a strategic plan for research must include an organizational design that will ensure successful attainment of the plan's objectives. According to Rosenberg (1991), a principal challenge in establishing high-quality interdisciplinary research is the creation of appropriate organizational conditions and

incentives. If planned, implemented, and managed properly, BLM's investment in research will be realized in terms of proactive resource management policies and more informed land management decisions.

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